UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,854	11/19/2001	John Teloh	SMQ-082CN2/P6396CNT1	9383

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LAHIVE & COCKFIELD, LLP
ONE POST OFFICE SQUARE
BOSTON, MA 02109-2127

EXAMINER
ABEL JALIL, NEVEEN

ART UNIT	PAPER NUMBER
2165	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	09/988,854	TELOH ET AL.
	Examiner	Art Unit	
	Neveen Abel-Jalil	2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 January 2007</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-31* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1,2,4-8,11,13,15,18-20,22-26,29 and 31* is/are rejected.

7) ☒ Claim(s) *3,9,10,12,14,16,17,21,27,28 and 30* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Remarks

1.   The Amendment filed on January 9, 2007 has been received and entered. Claims

1-31 remain pending.

2.   Applicant's amendment has overcome the previous claim objections.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-2, 4-8, 11, 13, 15, 18-20, 22-26, 29, and 31 are rejected under 35

U.S.C. 102(b) as being anticipated by Kern et al. (U.S. Patent No. 5,870, 537).

As to claims 1, 19, and 31, Kern et al. discloses in a storage network, a method to

update a first replica held by a physically remote storage device in said storage network,

said method comprising the steps of:

instructing a first data replication facility of a first electronic device in said

storage network to log one or more writes to a local storage device when said first replica

held by said physically remote storage device is unavailable due to a detected error

condition in the storage network (See Figure 7, 715, 720, and 725);

determining at said first electronic device when said detected error condition no

longer exists in the storage network (See Figure 7, 745, stop write);

upon determination that said detected error condition no longer exists, instructing

said first data replication facility of said first electronic device to replicate data

corresponding to the one or more writes identified in said log to generate a second replica

(See Abstract, also see column 5, lines 10-35); and

outputting said second replica in accordance with a communication protocol from

said first electronic device to a second data replication facility of a second electronic

device of said physically remote storage device in said storage network to update said

first replica (See column 6, lines 15-39).

As to claims 2, and 20, Kern et al. discloses further comprising the step of:

identifying to said first data replication facility of said first electronic device

which of said one or more writes to said local storage device are not logged when said

physically remote storage device is unavailable (See Figure 7, 745, stop write).

As to claims 4, and 22, Kern et al. discloses further comprising the step of:

instructing said first replication facility of said first electronic device to obtain

authorization from an operator of said first replication facility for said output of said

second data replica to said second data replication facility of said second electronic

device to update said first replica (See column 6, lines 15-39).

As to claim 6, <u>Kern et al.</u> discloses comprising the step of: instructing said second replication facility of said second electronic device to log said one or more writes to a second local storage device of said second electronic device (See column 6, lines 15-39).

As to claims 7, and 25, <u>Kern et al.</u> discloses further comprising the steps of:

detecting an available communication link in said storage network between said first electronic device and said second electronic device to transport data between said first electronic device and said second electronic device (See Figure 2); and

prompting said system operator to select a primary replication facility and a secondary replication facility from amongst said first replication facility of said first electronic device and said second replication facility of said second electronic device (See Figure 5);

upon selection by said system operator, instructing said primary replication facility to generate said second replica of data identified in said log (See abstract); and

instructing said primary replication facility to output said second replica to said secondary replication facility via said available communication link to update said first replica (See Figure 8, 880).

As to claims 8, 15, and 26, <u>Kern et al.</u> discloses comprising the step of:

forwarding from said first data replication facility of said first electronic device to said second data replication facility at said second electronic device information identifying a storage location on said physically remote storage device for storage of said

second replica (See column 11, lines 1-12).

As to claims 11, 18, and 29, Kern et al. discloses wherein said first electronic

device and said second electronic device operate without a volume manager facility (See

column 12, lines 60-63).

As to claim 13, Kern et al. discloses in a computer network having a plurality of

programmable electronic devices, wherein each of said plurality of programmable

electronic devices operates as a host device for a data replication facility for replicating

data among said plurality of programmable electronic devices, said method comprising

the steps of:

instructing each said data replication facility of each of said plurality of

programmable electronic devices to enter a logging routine when said host device of said

data replication facility, wherein said logging routine halts said replicating of data by said

replication facility of said host device and said replication facility of said host device

identifies in a log each local write of said host device that detect said communication link

failure (See Abstract, also see column 5, lines 10-35, and see column 13, lines 40-55);

and

instructing each said data replication facility of each of said plurality of

programmable electronic devices that initiated said logging routine to generate a replica

for each said local write identified in said log upon reestablishment of said

communication link (See column 14, lines 6-24).

As to claim 24, <u>Kern et al.</u> discloses comprising the steps of:

detecting a communication link failure in said storage network between said first

programmable electronic device and said second programmable electronic device (See

Figure 5); and

instructing said second replication facility of said second programmable

electronic device to enter said first state to log one or more writes to a second local

storage device coupled to said second programmable electronic device (See column 6,

lines 30-39).

Allowable Subject Matter

5.   Claims 3, 9-10, 12, 14, 16-17, 21, 27-28, and 30 are objected to as being

dependent upon a rejected base claim, but would be allowable if rewritten in independent

form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6.   Applicant's arguments filed on January 9, 2007 have been fully considered but

they are not persuasive.

In response to Applicant's argument that "<u>Kern et al.</u> does not teach or suggest

instructing a first data replication facility of a first electronic device to log one or more

writes to a local storage device when said first replica held by said physically remote

storage device is unavailable due to a detected error condition " is acknowledged but not

deemed to be persuasive.

Just as asserted by the Applicant's response on page 9, Kern et al.'s (error

recovery program) ERP (see Figure 7, operations 715, 720, and 725, column 12, lines 20-

35, column 14, lines 6-12) determines if an error condition is permanent (I/O Path is

unavailable) and once the determination is made, the error is stored in maintenance log

which is basically stating if the remote connection for copy/backup is unavailable then

error is logged locally in a maintenance log, not different or distinct from the argued

claimed limitation.

Applicant also argues on page 10 of the response that "in Kern et al., the primary

storage device is swapped out and writes are directed to remote storage device rather than

instructing the storage to log writes to the local storage device" which is not persuasive,

since as it is pointed out in Kern et al. Figure 7, 730, teaches the host logs the error, and

in column 14, lines 6-24, Kern et al. also teaches that the host writes record updates to the

primary DASDs 4 (i.e. stored locally in remote copy); furthermore, since Kern et al.'s

system is full duplex, the operation can iterate continuously between the two sites.

Kern et al. not only bi-directional and full duplex thus what is presumed to be

local and remote can be interchangeable but also supports linking multiple storage

locations; thus, still reads on argued claimed limitation. In light of the current claim

language, it is difficult to ascertain the difference between the cited art and argued

limitation.

In response to Applicant's argument that "Kern et al. givens no indication that

once a network connection is reestablished, a second replica is generated using the write

log and then output to the remote storage device to update the first replica as required by

claim 1, 19, and 31" is acknowledged but not deemed to be persuasive.

In <u>Kern et al.</u> as taught in column 12, lines 20-35 once the swap takes place under

disaster recovery scenario then the connection is reestablished and thus copies can be

propagated and validated again to the secondary and/or primary site from the log file. The

Examiner interprets a "second replica" broadly to read on another copy or

resynchronization of the data being propagated as taught in column 12, lines 40-65.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the mailing date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Neveen Abel-Jalil whose telephone number is 571-272-

4074. The examiner can normally be reached on 8:30AM-5:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jeffrey A. Gaffin can be reached on 571-272-4146. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

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have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

Customer Service Representative or access to the automated information system, call

800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Neveen Abel-Jalil
March 19, 2007